extending its scope and practically rewriting it, until the present volume came out of it. Entomologists, orchardists, farmers and teachers are all indebted to Professor Sanderson for bringing together the scattered up-to-date information presented in this book. Many control methods and remedies recommended in previous works have recently been superseded and are therefore out of date.

The subject matter of the volume in question is well presented, and the illustrations for the most part are satisfactory, though one questions if it is not better to use photographs entirely of spraying apparatus rather than the trade cuts from manufacturers' catalogues. Some other ancient cuts have also been used which do not add to the usefulness or attractiveness of the volume. Most of the illustrations are excellent, a goodly number are original, and many have appeared before in entomological journals and experiment station bulletins, due credit being given. It is perhaps impossible to prepare and print a work of this magnitude without finding some errors in it, but the errors in this volume are mostly typographical, and can easily be corrected in future editions. A few of the illustrations are badly printed, but in most respects the mechanical production of the book leaves nothing to be desired.

The work should supply a distinct need, and ought to be placed on the shelves of all libraries.

W. E. Britton

TERMS USED TO DENOTE THE ABUNDANCE OR RARITY OF BIRDS

When reading lists of birds, which indicate their abundance or rarity, it is often very difficult to tell just how common or how rare a bird is, for it is seldom that any two people use the same scale of terms. In fact few have any definitely graded scale, most preferring to write them as they are needed, and consequently, without realizing, they have a long illogical list of terms. Those most frequently adopted are given below. I have limited myself to eight, which are: abundant, common, frequent, uncommon, occasional, rare, scarce and irregular. Together with other terms that are used I have given my reasons for not using them. Those which I have selected have been proposed chiefly, and all agreed to by Mr. C. William Beebe.

Abundant.

Very Common is the same as Abundant, for Abundant means More Common than Common.

Common.

Plentiful means the same as Abundant or Common.

Usually Common or Usually Rare are the same as Common or Rare, for we are writing about what the bird usually is, so Usually may be omitted.

Quite Common. The real meaning of Quite is "completely" or "wholly." It is wrongly used to indicate "to a considerable extent." Thus Quite Common, correctly used, means no more than Completely Common, or simply Common.

Not Uncommon is equal to Common.

Tolerably Common is usually used to mean Fairly Common, but thus used it is a very meaningless word, as tolerably means that which can be endured. If one wishes to use it as meaning Fairly Common, he can just as well use the latter word or, instead of these, Frequent.

Frequent.

Often Seen is the same as Frequent.

Usually Tolerably Common is the same as Tolerably Common, which is the same as Frequent.

Fairly Plentiful is the same as Fairly Common.

Fairly Common is the same as Frequent.

Uncommon.

Infrequent is the same as Uncommon or Occasional.

Not Common is Uncommon.

Occasional.

Sometimes Seen is Occasional.

Accidental is Occasional or Rare.

Rare.

Very Rare is using an unnecessary adverb, for Rare is Very Rare, and to use the latter, only makes a list more confusing and difficult to understand.

Scarce.

Scarce does not mean the same as Rare, but indicates that the bird mentioned was at some previous time Common, but that it has since decreased in numbers until it is now Rare.

Very Scarce means Scarce (Very is unnecessary).

Irregular.

Irregular indicates that at times the bird may be Common and at other times Rare. Often this has to be used in connection with one of the other seven terms. In such cases it is often necessary to add Usually; as: Crossbill, Irregular, Usually Rare.

Of course it is not intended that these terms should always be used by themselves. One may use them, when necessary, in conjunction with other words; as, Common Migrant, Scarce Resident, etc.

JOHN DRYDEN KUSER

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TRIVALENT PLATINUM

THE first evidences of the existence of compounds in which platinum acts with a valence of three were found about two years ago by Wöhler. On carefully chlorinating $PtCl_2$ or dechlorinating $PtCl_4$ at 390°, a greenish-black powder was formed which had the formula $PtCl_3$. This dissolved slightly in cold water, but more rapidly in hot, with the formation of an acid, H_2PtCl_3O, some hydrolysis also taking place. By precipitating with soda, a pure hydrated sesquioxid was obtained, but this could not be dehydrated without decomposition. When the hydrate was dissolved in acid a mixture of chloroplatinous and chloroplatinic acids was formed. Wöhler found, however, that when a dilute solution of cesium and a mixture of chloroplatinous and chlororin water, a dark-green powder is precipitated, of the composition Cs_2PtCl_5, which has a strong tendency to decompose into the chloroplatinite and chloroplatinate.

This work has been strikingly confirmed in a paper read by Levy before the Chemical Society (London) on March 25. Levy was working on the copper-red iridescent salt, discovered by Hadow, which is formed when chlorin or bromin is added to a solution of potassium cyanoplatinite. To this Hadow gave the composition of $5K_2Pt(CN)_4 \cdot K_2Pt(CN)_4 \cdot Br_2$. The character of the salt Levy confirmed, but its formula should be $6K_2Pt(CN)_4 \cdot K_2Pt(CN)_4 \cdot Br_2$. Levy also found that when the cyanoplatinite is oxidized by lead or manganese dioxid in the presence of sulfuric acid, a similar compound is formed, but containing SO_4 instead of Br_2, which behaves like the sulfate of a feebly electropositive element; in other words the group $(7K_2Pt(CN)_4)$ acts like a bivalent positive ion. More interesting was the result when hydrogen peroxid and other peroxids were used as the oxidizing agents. With the potassium cyanoplatinite there is at once formed a well-defined, crystallized double salt of the composition $3K_2Pt(CN)_4 \cdot KPt(CN)_4 \cdot 6H_2O$, which is not further acted on by hydrogen peroxid. When, however, perhydrol is used the oxidation to $KPt(CN)_4$ is complete, and a series of similar salts was prepared. With the free cyanoplatinous acid, $H_2Pt(CN)_4$, the oxidation to $HPt(CN)_4$ by hydrogen peroxid is complete. Here we have an acid and its salts in which the platinum acts, as in Wöhler's halid salts, as trivalent, and its formula may be written $HCN \cdot Pt(CN)_3$. These cyanoplatinates would bear the same relation to the cyanoplatinites as the ferrocyanids bear to the ferricyanids. This is unexpected, as it would naturally be inferred that in accordance with the analogy furnished by the haloplatinites and haloplatinates, the cyanoplatinates would have the formula $M_2Pt(CN)_6$. No evidence was found of similar compounds of the type $2MCN \cdot Pt(CN)_3$ or $3MCN \cdot Pt(CN)_3$. On treatment with KCN or with any alkali, decomposition ensued, with the regeneration of the cyanoplatinite.

J. L. H.

SPECIAL ARTICLES

SIMPLE DEMONSTRATION APPARATUS FOR THE INFRA-RED SPECTRUM

MOST teachers of experimental physics in this country do not attempt to illustrate the optical properties of matter in the long wavelength invisible spectrum, for the reason that the standard detecting instruments, the bolometer, thermopile, radiometer or radiomicrometer, are not particularly well suited for use in the lecture room where great stability is not usually ensured. Moreover, unless the lec-